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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,198	12/05/2001	Yoichiro Kurita	01488/2000-370980	2453

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EXAMINER

LEE, JINHEE J

ART UNIT	PAPER NUMBER
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2831

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,198

Applicant(s)

KURITA, YOICHIRO *CN*

Examiner

Jinhee J Lee

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 46-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 46-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Drawings

1. The informal drawings submitted on June 30, 2003 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the external terminal of claim 4, the conductor bump of claim 14, and resin body of claims 17-18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. (Specification, page 9, lines 6-9 fails to show the conductor bump.)
2. The informal drawings submitted on June 30, 2003 are objected to because Figures 3B and 3C lacks the proper cross hatching which indicates the type of materials which may be in an invention. Specifically, the cross-hatching to indicate the conductor and insulation materials is incorrect. The applicant should refer to MPEP Section 608.02 for the proper cross hatching of materials. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
3. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

Specification

4. The disclosure is objected to because of the following informalities:

At page 6 lines 19-20 (amended), "is part of an electronic instrument" has grammatical error. Examiner suggests "as part of an electronic instrument" instead.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 48 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 48 line 2 recites the limitation "support member to isolate, electrically, said lead member and said external electrode". This is confusing.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 4, 5, 8-11, 15-23, 46-49 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Houtz (US006358068).

Re claim 1, Houtz discloses an electric terminal (including 100 for example) for an electronic device comprising: an external electrode (solder ball 100 for example); a lead member (98, lower section of contact) disposed on an internal electrode (92, medial section of contact) of the electronic device (contact, including 66 for example),

at least a portion of said lead member being a conductor electrically connecting said external electrode and the internal electrode; and a support member (base wall 14 for example) disposed on the electronic device in the vicinity of said lead member for supporting said external electrode at least upon application of an external thrust force which deforms said lead member (see figures 1, 2 and 13).

Re claim 2, Houtz discloses an electric terminal, wherein said support member is in contact with said external electrode upon application of no external thrust force (see figure 5).

Re claim 4, Houtz discloses an electric terminal, wherein said external electrode comprises an external terminal (98 with 100 for example), and wherein said external terminal includes a solder ball (see figure 13).

Re claim 5, Houtz discloses an electric terminal, wherein said external electrode includes a core (unnumbered center part of 100), at least a portion of which is covered by a solder coat (see figure 13).

Re claim 8, Houtz discloses an electric terminal, wherein said lead member comprises a conductor (see figure 13).

Re claim 9, Houtz discloses an electric terminal, wherein said lead member includes a conductor body (66 for example) (see figure 13). Houtz does not explicitly disclose that the conductor body is formed by plating. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 10, Houtz discloses an electric terminal, wherein said lead member includes a conductor body (66 for example) formed separately from and connected to the electronic device (see figure 13).

Re claim 11, Houtz discloses an electric terminal with lead member (see figure 13). Houtz does not explicitly disclose that the lead member is formed by etching a metallic film. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 15, Houtz discloses an electric terminal, wherein said lead member includes an insulator body (on 534 for example) having a through hole (unnumbered) filled with a plating conductor (see figure 33 and column 10 line 53-54).

Re claim 16, Houtz discloses an electric terminal, wherein said support member includes an insulator body (see figure 2). Houtz does not explicitly disclose that the insulator body is patterned by a photolithographic technique. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 17, Houtz discloses an electric terminal, wherein said support member includes resin body (see figure 2). Houtz does not explicitly disclose that the resin body is formed by a transfer molding technique. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 18, Houtz discloses an electric terminal, wherein said support member includes resin body (see figure 2). Houtz does not explicitly disclose that the resin body was etched to form the supporting member. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 19, Houtz discloses an electric terminal, wherein said support member includes resin body (see figure 2). Houtz does not explicitly disclose that the resin body was etched using at least one of laser etching, wet etching and dry etching. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 20, Houtz discloses an electric terminal, wherein said support member includes an insulator body (base wall 14 for example) having a through hole (unnumbered near the recess) through which said lead member passes (see figures 2 and 13).

Re claim 21, Houtz discloses an electric terminal with support member. Houtz does not explicitly disclose that patterning an insulator plate by etching was used to form the supporting member. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 22, Houtz discloses an electric terminal with support member. Houtz does not explicitly disclose that the etching is either laser etching, wet etching and dry etching. However the method of forming a device is not germane to the issue of

patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Re claim 23, Houtz discloses an electronic instrument comprising the electric terminal as defined in claim 1 above (see column 1, line 29).

Re claim 46, Houtz discloses an electric terminal, wherein said support member partially surrounds said lead member (see figure 13). Houtz does not explicitly disclose that the support member is to prevent excessive deformation of said lead member, however, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Re claim 47, Houtz discloses an electric terminal, wherein said lead member (98) is separately disposed from said support member when no external force is applied (see figure 13, lead member 98 is not touching the base).

Re claim 48 (as best understood), Houtz discloses an electric terminal, wherein said lead member (98) is substantially parallel to said support member to isolate, electrically, said lead member and said external electrode from other external electrode. (see figure 13).

Re claim 49, Houtz discloses an electric terminal, wherein said support member is comprises a plurality of insulator poles disposed radially outside said lead member (see figure 13, bottom parts of the base).

Re claim 51, Houtz discloses an electric terminal with support member partially surrounding the lead member. Houtz does not explicitly disclose that the support member is made by etching. However the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Houtz.

Re claim 50, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said support member is separately disposed from said external electrode. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use support member separately disposed from said external electrode, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

11. Claims 3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houtz in view of Beroz et al. (US006329605).

Re claim 3, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said support member is out of contact

Art Unit: 2831

with said external electrode upon application of no external thrust force. However, Beroz et al. teaches of an electric terminal with a support member (406 for example) that is out of contact with an external electrode (426 for example) upon application of no external thrust force (see figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use external electrode that is out of contact with the support member of Beroz et al. on the electric terminal of Houtz in order to provide electrical isolation.

Re claim 6, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said external terminal includes a central core made of at least one conductor material and covered by a solder coat, said conductor material having a melting point higher than a melting point of said solder coat. However, Beroz et al. teaches of a central core made of at least one conductor material and covered by a solder coat, said conductor material having a melting point higher than a melting point of said solder coat (see column 2 lines 18-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a central core made of at least one conductor material and covered by a solder coat, said conductor material having a melting point higher than a melting point of said solder coat as taught by Beroz et al. on the electric terminal of Houtz in order to provide none melting core.

Re claim 7, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said external terminal includes a central core made of at least one conductor material and covered by a solder coat, said central

Art Unit: 2831

core receiving therein an insulator sub-core. However, Beroz et al. teaches of a central core made of at least one conductor material and covered by a solder coat, said central core receiving therein an insulator sub-core (void for example) (see column 2 lines 18-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a central core made of at least one conductor material and covered by a solder coat, said central core receiving therein an insulator as taught by Beroz et al. on the electric terminal of Houtz in order to engage protruding solder.

12. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Houtz in view of Applicant's prior art figure 1D.

Re claim 12, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said lead member includes a wire. However, Applicant's prior art figure 1D teaches of a lead member that includes a wire. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a lead member that includes a wire as taught by Applicant's prior art figure 1D on the electric terminal of Houtz in order to achieve a higher density of the external terminals.

Re claim 13, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said lead member includes a wire covered by an insulator coat. However, Applicant's prior art figure 1D teaches of a lead member that includes a wire covered by an insulator coat. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a lead member that includes a wire covered by an insulator coat as taught by Applicant's prior

art figure 1D on the electric terminal of Houtz in order to achieve a sufficient mechanical strength and resilience.

Re claim 14, Houtz substantially discloses an electric terminal as set forth in claim 1 above. Houtz does not explicitly disclose that said lead member includes a conductor bump made of solder. However, Applicant's prior art figure 1D teaches of a lead member that includes a conductor bump made of solder. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a lead member that includes a conductor bump as taught by Applicant's prior art figure 1D on the electric terminal of Houtz in order to achieve a higher density of the external terminals.

Response to Amendment

13. The amendment filed 6/30/03 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Newly submitted drawing figure 6, this figure is not supported by other original drawings nor original specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

14. Applicant's arguments filed 6/30/03 have been fully considered but they are not persuasive.

In response to applicant's arguments that the prior art does not teach nor suggest "a support member disposed on the electronic device in the vicinity of said lead

member for supporting said external electrode at least upon application of an external thrust force which deforms said lead member”, examiner disagrees. The cited prior art does teach “and a support member (base wall 14 for example) disposed on the electronic device in the vicinity of said lead member for supporting said external electrode at least upon application of an external thrust force which deforms said lead member (see figures 1, 2 and 13)”.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., reducing “cracking” of the solder balls and “preventing an excessive deformation of the lead member during an electrical test step of the electronic device, wherein the solder ball is applied with a thrust force by a probe pin, by maintaining the location of the solder ball within a specified range”) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Also note that, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

In response to applicant's arguments that the prior art does not teach nor suggest “a support member disposed on the electronic device”, examiner disagrees. The abstract of Houtz teaches of “Electrical connectors capable of being mounted on circuit substrates”. Circuit substrates are part of an electronic device.

In response to the Applicant's argument that Houtz's intended use or function is different than the applicant's invention, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

In response to the argument that Houtz does not disclose any deformation, examiner disagrees. Fusing of solder balls, involves deformation.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "lateral walls are not separately disposed from the solder balls") are not recited in the rejected claim(s). Claim states "at least upon application of an external thrust force", thus application of an external thrust force is not a requirement, only a possibility. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both Beroz et al.

, Applicant's Prior Art figure 1D and Houtz teach of using solder layers in electrical components.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's arguments that Prior Art does not disclose, teach or suggest that "lead member includes a conductor bump", examiner disagrees. The Prior art figure 1D shows a conductor bump on the lead member.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 2831


shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jinhee J Lee whose telephone number is 703-306-0154. The examiner can normally be reached on M, T, Th, F at 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

jji
August 21, 2003

 8/22/03
DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800